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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/565,094 | 01/17/2007 | Jeffrey Blyth | GJE.7543 | 5601 |

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SALIWANCHIK LLOYD & SALIWANCHIK
A PROFESSIONAL ASSOCIATION
PO Box 142950
GAINESVILLE, FL 32614

| EXAMINER | |
|---|---|
| CHWASZ, JADE R | |
| ART UNIT | PAPER NUMBER |
| 2872 | |

| NOTIFICATION DATE | DELIVERY MODE |
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| 06/24/2010 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

euspto@slspatents.com

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/565,094 | BLYTH ET AL. | |
| | Examiner | Art Unit | |
| | Jade R. Chwasz | 2872 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *24 May 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/24/10 has been entered.

### *Response to Arguments*

2. Applicant's arguments filed 5/24/10 have been fully considered but they are not persuasive. Applicants argue that there are several differences between the instant invention and the prior art of record. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a means for measuring a hologram with alterable characteristics, that the device operates over a range of angles and distances from a holographic element, that the present invention is devised to function with interposing scattering media down to where only low levels of reflected light exist, that the device has a single holographic reflector which changes its wavelength reflecting properties depending on its contact with an analyte of interest, and that the reflector is capable of reflecting light across a range of wavelengths corresponding to the changing responsive state of the holographic element) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the

specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicants argue that the combination of Stephens et al. and Lowe et al. is based on hindsight reasoning. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this instance, Stephens et al. and Lowe et al. are related as hologram devices which both include means for transmitting light to and from a hologram surface. Stephens et al. teach an alternative method for transmitting the light utilizing optical fibers. Further, a person of ordinary skill in the art would have been motivated to combine the references in order to utilize information gleaned from the reflection of the light off the holographic surface so that the reflected color is indicative of the part of the reflector from which it is received.

Applicants argue that the prior art of record does not teach or reasonably suggest that "the non-planar mirror is concave, convex, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism." The Examiner respectfully disagrees and notes that the claims are rejected under 35 U.S.C. 103, not 35 U.S.C. 102, and that the Examiner is relying on the combination of references to teach the

limitations as currently claimed. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this instance, Lowe et al. disclose that a hologram can be a reflection hologram (i.e. the hologram is formed as a mirror) [col. 4, lines 32-39]. Yin et al. teach that a hologram can be formed as a non-planar surface (e.g. 21, photopolymer layer) wherein the non-planar surface is convex and/or concave (e.g. figures 1-4) [col. 2, lines 7-56]. As such, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the hologram substrate of Lowe et al. to have curvature, as taught by Yin et al., in order to have a reflection hologram formed on a curved surface without distorting the optical properties of the hologram layer, thus increasing the number of applications possible for the holographic element.

The Examiner also notes that the limitation "wherein the non-planar mirror is concave, convex, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism" is written in the alternative, such that only one configuration of the non-planar mirror is necessary to meet the limitation as currently claimed. It appears from Applicant's arguments that the non-planar mirror must possess both the properties of concavity and convexity in the one mirror. However, Examiner disagrees with that position in that the comma indicates an "or" and it is treated as concave or convex—not concave and convex. Additionally, if it is for Applicant's intent to claim concave and convex, the Examiner notes that there is no support for such an

embodiment in the Specification or Drawings as originally filed. Further, note that the Court has held that a mere change in shape of an element is generally recognized as being within the level of ordinary skill in the art when the change in shape is not significant to the function of the combination, see **In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)**. All mirrors, whether they be concave, convex or cube-corner shaped, are capable of effecting retroreflection. Further, one would have been motivated to have the hologram be recorded using one or more reflective beads, or have the non-planar mirror be a corner cube prism, in order to reduce scattering of light during reflection.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-6 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe et al. (5,989,923), Stephens et al. (GB 2054995 A) and Yin et al. (5,499,117) of record.

Consider claim 1, Lowe et al. disclose (e.g. figure 1a) an apparatus for detecting an analyte, comprising: a sensor (9, sensor) comprising a medium (10, support medium) and, disposed therein, a hologram (17, hologram) wherein an optical characteristic of the hologram changes as a result of a variation of a physical property of the medium resulting from interaction with the analyte, and wherein the hologram is

formed as a non-planar mirror (reflection hologram with fringes that can be flat or curved) [col. 4, lines 32-39, col. 10, lines 4-39]. However Lowe et al. do not disclose a unit of optical fibers for transmitting light to and from the hologram or that the non-planar surface is concave, convex, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism. Lowe et al. and Stephens et al. are related as devices comprising holograms. Stephens et al. teach (e.g. figures 1-3) a unit of optical fibers (3-14, optical fibers) for transmitting light to and from a hologram (17, reflecting surface) [pg. 2, lines 42-103]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Lowe et al., as taught by Stephens et al., in order to guide light with the narrowest possible bandwidth to the holographic surface so that the colors reflected are indicative of the part of the reflector from which it is received.

However, the modified Lowe et al. reference does not disclose that the non-planar surface is convex, concave, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism. Lowe et al., Stephens et al. and Yin et al. are related as devices utilizing holograms. Yin et al. teach a non-planar surface that is convex and/or concave (e.g. figures 1-4) [col. 2, lines 7-56]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the hologram substrate of the modified Lowe et al. reference to have curvature, as taught by Yin et al., in order to have a reflection hologram formed on a curved surface without distorting the optical properties of the hologram layer to increase the number of applications possible for the holographic element.

Consider claim 2, the modified Lowe et al. reference discloses (e.g. figure 4 of Stephens et al.) an apparatus wherein the hologram is formed as a concave mirror [pg. 3, lines 18-22].

Consider claim 3, the modified Low et al. reference discloses (e.g. figure 1 of Yin et al.) an apparatus wherein the hologram is formed as a convex surface [col. 2, lines 7-56 of Yin et al.].

Consider claim 4, the modified Lowe et al. do not disclose that the hologram is formed as a corner cube prism. Note that the Court has held that a mere change in shape of an element is generally recognized as being within the level of ordinary skill in the art when the change in shape is not significant to the function of the combination, see **In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)**. All mirrors, whether they be concave, convex or cube-corner shaped, are capable of effecting retroreflection. Further, one would have been motivated to have the hologram be formed as a corner cube prism in order to reduce scattering of light during reflection.

Consider claim 5-6, Lowe et al. disclose (e.g. figure 1a) a method for the production of an apparatus comprising a sensor (9, sensor) comprising a medium (10, support medium) and, disposed therein, a hologram (17, hologram), wherein an optical characteristic of the hologram changes as a result of a variation of a physical property of the medium resulting from interaction with the analyte, and wherein the hologram is formed as a non-planar mirror (reflection hologram with fringes that can be flat or curved); wherein the method comprises forming, in a non-planar medium (can be flat or curved), a hologram, as a non-planar mirror (reflection hologram with fringes that can be

flat or curved), that is recorded using a planar mirror [col. 4, lines 32-39, col. 10, lines 4-39]. However Lowe et al. do not disclose that the apparatus comprises a unit of optical fibers or that the non-planar surface is concave, convex, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism. Lowe et al. and Stephens et al. are related as devices comprising holograms. Stephens et al. teach (e.g. figures 1-3) an apparatus comprising a unit of optical fibers (3-14, optical fibers) [pg. 2, lines 42-103]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Lowe et al., as taught by Stephens et al., in order to guide light with the narrowest possible bandwidth to the holographic surface so that the colors reflected are indicative of the part of the reflector from which it is received.

However, the modified Lowe et al. reference does not disclose that the non-planar surface is convex, concave, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism. Lowe et al., Stephens et al. and Yin et al. are related as devices utilizing holograms. Yin et al. teach a non-planar surface that is convex (e.g. figure 1) [col. 2, lines 7-56]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the modified Lowe et al., reference, in view of Yin et al., in order to have a curved surface without distorting the optical properties of the hologram layer.

Consider claim 14, Lowe et al. disclose (e.g. figure 1a) a method for the detection of an analyte, which comprises remotely interrogating, with light, the holographic element of a sensor (9, sensor) comprising a medium (10, support medium) and,

disposed therein, a hologram (17, hologram), wherein an optical characteristic of the hologram changes as a result of a variation of a physical property of the medium resulting from interaction with the analyte, and wherein the hologram is formed as a non-planar mirror (reflection hologram with fringes that can be flat or curved); wherein the method further comprises detecting any change in an optical characteristic of the sensor [col. 4, lines 32-39, col. 10, lines 4-39]. However Lowe et al. do not disclose that the interrogating is via a unit of optical fibers that transmits the light to and from the hologram or that the non-planar surface is concave, convex, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism. Lowe et al. and Stephens et al. are related as devices comprising holograms. Stephens et al. teach (e.g. figures 1-3) interrogating via a unit of optical fibers (3-14, optical fibers) that transmits the light to and from a hologram (17, reflecting surface) [pg. 2, lines 42-103]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Lowe et al., as taught by Stephens et al., in order to guide light with the narrowest possible bandwidth to the holographic surface so that the colors reflected are indicative of the part of the reflector from which it is received.

However, the modified Lowe et al. reference does not disclose that the non-planar surface is convex, concave, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism. Lowe et al., Stephens et al. and Yin et al. are related as devices utilizing holograms. Yin et al. teach a non-planar surface that is convex (e.g. figure 1) [col. 2, lines 7-56]. It would have been obvious to a person of

ordinary skill in the art at the time the invention was made to modify the modified Lowe et al., reference, in view of Yin et al., in order to have a curved surface without distorting the optical properties of the hologram layer.

Consider claim 15, Lowe et al. teach (e.g. figure 1a) a method wherein the light source is collimated (12, laser light rays from a laser source) [col. 10, lines 4-14].

Consider claims 16-19, the modified Lowe et al. reference discloses a recording surface that is formed as a non-planar surface (e.g. figure 1 of Yin et al.) [col. 2, lines 7-40 of Yin et al.].

5. Claims 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe et al. (5,989,923) in view of Stephens et al. (GB 2065995 A) and Yin et al. (5,499,117) as applied to claims 1 and 5 above, and further in view of Mizutani et al. (6,483,611) of record.

Consider claims 7-10, the modified Lowe et al. do not specifically disclose a sensor wherein the hologram is formed using a planar, non-planar, concave mirror or a mirror capable of effecting retroreflection. Lowe et al., Stephens et al. and Mizutani et al. are related as devices utilizing holograms. Mizutani et al. teach (e.g. figure 1-2) a sensor wherein the hologram is formed using a planar, non planer and concave mirrors [col. 1, lines 59-67, col. 2, lines 7-9, 65-68, col. 3, lines 1-11 and col. 15, lines 26-53]. Note that a retro reflector is defined as a device that reflects light back to its source. As such, the mirrors of Mizutani et al. will function as retroreflectors. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to

modify the device of Lowe et al., as taught by Mizutani et al., in order to allow for magnification or reduction of an image formed from the hologram element.

Consider claim 11, the modified Lowe et al. reference does not disclose that the hologram is recorded using a corner cube prism. Note that the Court has held that a mere change in shape of an element is generally recognized as being within the level of ordinary skill in the art when the change in shape is not significant to the function of the combination, see **In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)**. All mirrors, whether they be concave, convex or cube-corner shaped, are capable of effecting retroreflection. Further, one would have been motivated to have the hologram be recorded using a corner cube prism in order to reduce scattering of light during reflection.

Consider claim 12, the modified Lowe et al. reference does not disclose that the hologram is recorded using reflective beads. Note that the Court has held that a mere change in shape of an element is generally recognized as being within the level of ordinary skill in the art when the change in shape is not significant to the function of the combination, see **In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)**. Further, one would have been motivated to have the hologram be recorded using reflective beads in order to reduce scattering of light during reflection and increase reflective capabilities.

Consider claim 13, the modified Lowe et al. reference discloses (e.g. figure 2 of Mizutani et al.) a method wherein the hologram is recorded using a lens (542, object lens) placed between the light source and the medium [col. 2, lines 19-35 of Mizutani et al.].

***Conclusion***

6. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jade R. Chwasz whose telephone number is (571)272-8199. The examiner can normally be reached on Monday to Friday 6:00 am -3:30 pm est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JRC
/Jade R. Chwasz/
Examiner, Art Unit 2872

/Stephone B. Allen/
Supervisory Patent Examiner
Art Unit 2872